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FOREST SERVICE

MONTHLY REPORT OF THE OFFICES OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

JUN 1925

GOVERNMENT PRINTING OFFICE 8—5156

RS
Reports
Monthly

MONTHLY REPORT OF THE OFFICES OF
FOREST EXPERIMENT STATIONS AND DENDROLOGY

June, 1925

Foreword

RESEARCH

By Professor Henry Shaler Williams.

The faculty for research is not some peculiar power of the mind, possessed by some and not possessed by others, but it is a common faculty of all intelligent minds, more active often in youth than later in life, and its exercise in forwarding research depends more upon its discipline and training than upon any so-called original endowment of its possessor. But research is diverse from study, and the legitimate outcome of its exercise is not learning what is already known, but the extending of the boundaries of knowledge beyond the point reached by others.

In order that these faculties may be appreciated and, when in a promising state of development, may be properly trained, it is requisite that the faculties be clearly recognized and understood, and that the kind of exercise necessary to strengthen and develop them be known and appreciated.

What, then, is the particular part of our mental processes by which research is accomplished? An answer to this question may be reached directly by distinguishing research from its most closely related activities, namely, investigation and study.

Study has for its direct aim the acquirement of knowledge; investigation has for its aim the understanding of the reasons and relations of things already known; full comprehension and scientific discernment are the results of its exercise. Pure research beyond both of these has for its aim the discovery of facts, truths and relations not previously known; its results are the extension of the field of knowledge.

Increased coordination of effort would be distinctly advantageous in many fields of science; and that in some, at least, it is a sine qua non to considerable progress in the future. How is this to be brought about? How are these diversities of talent and training to be brought together and held together to the end that they may accomplish that which in no other way can be accomplished? Cooperation among individual workers, entered into on their own initiative and held together by their own cohesiveness, has done something, and probably in future will do more.

In some districts of nature, and in some sorts of problems, this may fill the bill. To other districts and other kinds of problems, however, among which are undoubtedly some of the largest and potentially richest, I believe this kind of coordination can not extend in great effectiveness.

Organization around single large problems, or groups of closely related problems, with the two binding elements of talent for organizing and directing, and money for sustaining, I believe to be the direction in which we must look in the future more than we have been looking hitherto.

FOREST EXPERIMENT STATIONS

Washington

During June, three Directors of experiment stations were in Washington. Forbes completed his detail about the middle of the month and then left for a vacation before returning to New Orleans. Frothingham came the end of the month to attend the hearings of the Federal Horticultural Board regarding the quarantine on the white pine blister rust. Munger spent two days in Washington in going over Station plans and developments.

Most of the time of Mr. Clapp has been spent upon the "Status of Forest Research in the United States." In this report the work of the experiment stations, as well as the possibility of future developments in forest investigations and other forms of forest research, are outlined.

Shepard was in the field the entire month, most of the time being spent at the Lake States Station. From there he goes to District 1 and the Northern Rocky Mountain Station.

The Annual Investigative Program was completed the end of the month and in the early part of July was stenciled. It is expected this will be out in July.

A summary has been made of the various volume and yield tables in existence, which shows that a tremendous number has been prepared. A total of 250 yield tables have been prepared, of which 223 were made in the Forest Service and 10 in the schools. These covered 60 species or types. Of these tables 18 were for balsam fir, 14 for white pine, 13 each for loblolly and longleaf, and 12 for cottonwood. Nine hundred and fifty-three volume tables have been made, 842 in the Forest Service, 40 in the schools and 68 in the States. These cover 76 species. Of these tables 81 were for western yellow pine, 58 for eastern white pine, 50 for red spruce, 44 for Douglas fir, over 30 for lodgepole, beech, yellow poplar, hemlock and loblolly, besides numerous tables for a considerable list of other species.

There has come to our notice the July issue of "Tycos", published by the Taylor Instrument Company of Rochester, N. Y., which should be of great interest to all men interested in fire studies. It is suggested that those Stations not receiving Tycos request the company to put their name on the mailing list in order that they may get it regularly. Station libraries should include "Plant Physiology" by V. I. Palladin, translated and edited by B. E. Livingston, 1922. (Blakiston's, Phila.)

Tabulator

In the Tabulating Section the urgent work accruing at the end of the fiscal year, required practically 60 per cent of the entire time of the section, and resulted in considerable delay to the work of the experiment stations, as it was essential that this information be prepared in the shortest possible time. Numerous requests from the Budget Officer of the Department and from the Bureau of the Budget have necessitated a great amount of additional work other than the straight account work. Of the additional time in the section, 26 per cent was spent on lumber distribution.

Statistics

The checking of manuscripts, and particularly an exceedingly complicated one on "Lumber Distribution" prepared in the Washington office of Economics, required one-third of the time of Miss Meynes. An additional one-third was spent in the annual compilation of fire statistics based upon the returns from the Weeks Law report. The annual compilation of the statistical atlas was also fairly well completed.

Requests from the Senate Investigating Committee for additional data on grazing statistics and compilations have required the setting aside of all other work in order to satisfy their requests. These are still coming in, and 10 per cent of the time was devoted to their needs.

Measurements

The Committee on Growth and Yield sent out a questionnaire during the month based upon the results of the first memorandum, and replies are now being received. During July it is planned to complete the summary and to issue the first memorandum upon the preparation of yield tables proper.

Bruce spent a large part of the month upon the development of statistical technique and also on the southern pine growth study. Reineke's work included the southern pine growth study and one-third of his time was devoted to the southern white cedar and the western yellow pine volume table study. The latter has consumed nearly 30 per cent of the time of the Section of Forest Measurements, and the southern pine study a slightly larger amount. The white fir volume table material was largely completed and took up about 15 per cent of the section's time.

Library

During June the library loaned 990 books and periodicals, and 124 members of the Service and others consulted the library in person. There were 414 books and articles indexed for the card catalogue.

DENDROLOGY

Federal Horticultural Board

Two important public hearings were recently held in Washington by the Board for the purpose of considering the advisability in the near future of stopping all importations of foreign-grown rose-stocks and fruit-stocks.

So far, the Board has permitted unlimited importation of rose-stocks and fruit-tree seedlings, on which to graft choice home-grown roses and improved varieties of orchard fruits. The claims of American florists and orchardists are that finished rose plants and fruit trees grown on these foreign-grown stocks are better than when grafted on home-grown stocks, and that a sufficient supply of the latter sorts are unavailable in this country. The Board has seriously questioned these claims. But in the absence of definite information successfully to dispute these claims, the Board has been obliged to permit unlimited importations until certain conclusive facts could be gathered.

It was brought out clearly at these hearings, that in 1924 the United States produced, of all the different sorts of rose- and fruit-stocks used here, 35,675,000 plants. The trade interests imported a total in 1924, 25,700,000 plants from foreign countries. What percentage of home-produced stocks were sold and used here could not be determined. Lower prices of European-grown stocks undoubtedly led to the large import, since our trade can not be depended on to sacrifice profit in the interest of home production, which was large enough in 1924 to have met the actual need. The conclusion is forced that loyalty to home production can not be depended upon, unless home prices for the stock can be made as low as European prices, and it is impossible to effect this because of the wide difference in the price of labor.

The Board is convinced by the information gathered at these hearings that even now there is sufficient home production of rose- and fruit-stocks to take care of the country's need. In all probability, however, the Board will defer stopping all imports of these stocks for a few years.

Forest Specimens to Oxford

Recently the Imperial Forestry Institute, University of Oxford, England, made a special request to the Forest Service for specimens of the cones of Pinus aristata, P. monophylla, P. attenuata, P. sabiniana, P. torreyana, P. taeda, P. virginiana, P. pungens, and Pseudotsuga macrocarpa

for the purpose of completing their collection of North American conifers. The specimens were supplied by Sudworth from an abundance of duplicates on hand. The Director of the Imperial Institute in acknowledging receipt of the specimens expressed his deep appreciation to the Forest Service.

Naming the Trees in Trinity College Grounds

Trinity College is a Catholic Institution located in the vicinity of the Catholic University. The grounds contain several hundred native and foreign trees planted many years ago for ornament.

A request came to the Forest Service asking that the trees be identified so that the College can use the collection as a means of teaching dendrology. A number of rare and little known species were found in the grounds, among the exotics being Ulmus pumila (Chinese Elm), Cryptomeria japonica, and Melia azedarach. The latter is 10 or 12 feet high and is the only specimen of which Sudworth knows in the District that has not been frozen to the ground.

EDITOR'S OFFICE

"Technese and Hifalutin"

I don't find either of these words in the dictionary, and since the intention is to stress the necessity of using understandable English, it will be best to define them at the start. "Technese" is technical jargon, and its use generally implies a lack of interest on the writer's part in whether the reader understands him or not, so long as he is able to pose before the reader as a scientific shark. "Hifalutin" language is that mystic embroidery of verbiage that all of us good folk are inclined to crochet around our ideas at times - some of us all the time.

I've just run across a good example of technese that recently tripped up our portly friend Bolling Arthur Johnson. The Lumber World Review received from Forester F. K. Johnson of the Great Southern Lumber Co. a photo of some remarkable young growth, with the description "Twelve years old D. B. H." The editor kindly remarks that "undoubtedly Mr. Johnson intended to state what the D. B. H. diameter (sic!) was but left it out and we are writing to ask him about it." It would not have cramped Forester Johnson's style to have written Editor Johnson that the young trees were "twelve years old at breast height," but the temptation to sling the technese was too much for him. So it is for some of the rest of us. A reader may be intelligent enough to profit by what we have to tell him, and yet be utterly unacquainted with a considerable part of a forester's every-day vocabulary. No doubt a good number of the readers of our Bulletin's, etc., are today writing to the Bureau of Entomology for pamphlets on the Increment Borer and to the Curator of the American Museum of Natural History for information regarding the life and habits of that prehistoric creature, the Azimuth. What they make of Angiosperms, Lignes and Xerophytes it is difficult to conjecture.

Hifalutin is too familiar to all of us to need much illustration. With some writers it finds expression in six-cylinder adjectives and involved sentences in the best Teutonic style; with others it asserts itself in a continual outcropping of unnecessary little phrases, qualifying expressions, "in the case of," "with respect to," "a condition of," etc. In other instances it betrays the writer into such cliche's (technese for "stereotyped expressions") as "galore," "lavish profusion," and that solemn, owl-eyed phrase, "in the last analysis." Here are a few of these dud idioms that some will recognize with chagrin:

along these lines
beggars all description
depth of winter
equal to the occasion
familiar landmark
harked back
in great profusion
it goes without saying
modest requirements
untoward accident
velvety grass
wrought sad havoc
bids fair to
hope is entertained
leave no stone unturned
time immemorial.

The following is a specimen of hifalutin phraseology that I trust the author will pardon me for appropriating as a "horrible example." We all write this sort of thing at times, and all of us, including Ye Ed, are trying to live it down. The author claims that seeds found pocketed next to rock faces are to some extent contributed by squirrels and other seed-eaters. He wants to say that this is proved by seedcoats found, and that if they eat there it is reasonable to suppose that they bring some of the seeds with them. What he says is: "That rodents do often feed on top of rocks is evidenced by the empty seedcoats which they leave, and it is reasonable to assume that they themselves transport at least part of their supply thither."

We are irresistably but somewhat uncertainly reminded of Omar Khayyam and his lugubrious "thither coming whence, and whither flowing thence." But in addition to the mournful mood inspired by the "thither" are certain questions aroused by the rest of this rather remarkable sentence. "Do" -- why do? "Feed on top of rocks" --- Did they? if they did the picking must have been very poor! Some taste! "Which they leave" --- if they didn't leave them, how would we know they had been there? "They themselves" --- what? all alone, "unwept, unhonored, and unsung"? Couldn't some of these rangers who (vid. "Outlook") take annual leave in the midst of the fire season, have whiled away the halcyon hours of low humidity by spotting seed around the rocks just to fool the Branch of Research? "Transport"---Now there's a phrase of the wide open spaces that any squirrel might be proud to have applied to such a commonplace event as the pouching of a few pine seed. "At least"---Is not this reminiscent of the chorus from "Pinafore": "What, never? Well,---hardly ever!"? And then, of course, "thither"!

Now this hifalutin was probably wholly unconscious on the writer's part. And the editor's purpose is not to excoriate this particular author, but to apply the tonic of ridicule to that languid characteristic that makes all of us reel out such unnecessary and really laughable expressions. Rarely is a manuscript free from them and occasionally we are horrified to have pointed out to us in some cherished publication a grouping of words which indicates all too clearly that a flock of editors even err.

LAKE STATES FOREST EXPERIMENT STATION

The spring opened early in the Lake States this year. This, together with "economies" practiced by the Station during the year which left some field money, enabled us to develop the field work on a large scale during June.

Wackerman and Gevorkiantz spent the entire month in the field, mostly at the Cloquet Station and at Cass Lake. In both places plots were installed for the study of the annual accumulation and the commercial value of leaf litter. So far, five plots were established in jack pine and Norway pine stands. Another plot will be established later in an aspen stand.

Each plot covered as nearly an acre as it was possible to measure and still have the stand consistent. Within each plot, about 1200 square feet were covered with burlap, held close to the ground by lath and wire staples. The burlap was treated with linseed oil to prevent it from rotting away. Carbolinium was mixed with the oil to keep the burlap from becoming too attractive to rodents. Of the plots at Cloquet, one is located in a dense stand of 100-year-old Norway pine, one in a 50-year-old jack pine stand with some Norway, and one in a 30-year-old stand of open-grown jack pine. One of the Cass Lake plots is in a heavy stand of virgin Norway pine with a few white pine intermingled over 300 years old. The other is in 60-year-old jack pine. Both of the plots are on the Minnesota National Forest. In addition, one-square-foot blocks of soil with the different layers of leaf litter undisturbed were cut out and sent for analysis to the Division of Soils of the University of Minnesota. The first collection of leaf litter will be made in the fall before snowfall, and the second collection next spring. The weight of the air-dry leaf litter per acre will be computed and the chemical analysis of samples made by the Division of Soils.

Mitchell spent June in Wisconsin and Michigan. Since the analysis of fire statistics data in Minnesota and Michigan is practically completed, we thought to concentrate this spring on fire statistics data in Wisconsin. Much to our regret, however, the material available was extremely meager, consisting of the township fire wardens' reports for 1924 and brief summaries of fire statistics for previous years. Original reports for years prior to 1924 could not be found, nor were individual reports of fires handled by the district fire wardens employed through Weeks Law cooperation available. Wisconsin, therefore will have to be excluded from our fire statistics study. This year, however, a form for reporting fires has been adopted and from now on we hope more consistent and uniform information may be made available also in Wisconsin.

The rest of the month Mitchell spent in Lansing in compiling precipitation data from the original records prior to 1897, since before that date no records were published in detail. Progress was made during the month in securing the cooperation of the Duluth office of the Weather Bureau in the matter of special weather forecasts. The tentative plan worked out, having been approved by the Duluth office with certain minor changes, has been forwarded to the Washington office of the Weather Bureau for official sanction.

Kittredge spent part of June on the Minnesota National Forest and the rest of the month in Ontario, while Brown spent practically the entire month on the Minnesota National Forest and the last week on the Superior Forest. The work on the Minnesota National Forest, which was assisted by Shepard, H. H. Chapman, Tuttle and Petherman, consisted of the study of the establishment of Norway pine under jack pine stands of different densities, for the purpose of determining the best method of cutting in jack pine. The present idea is that if jack pine is not cut clean and there are Norway pine seed trees, the future reproduction under the jack pine will be largely Norway pine. Twenty-six temporary plots were taken in jack pine stands of different densities. The results tentatively seem to indicate:

1. Norway pine, where there is a good source of seed, comes in under jack pine regardless of density.

2. Jack pine reproduction is only a serious competitor of Norway in openings or clear cuttings.

3. For this reason, leave the jack pine cover or cut it only lightly until the Norway pine becomes 5 or 10 feet high; then clear cut the jack and release the Norway.

Other work on the Minnesota Forest consisted of the study for determining the best method of cutting aspen-birch stands to secure white pine reproduction under the aspen and birch. Although the study was undertaken at the request of the Minnesota National Forest, it is considered a part of the regular project on the possibilities of aspen-birch lands. A preliminary draft of a working plan for this study has been prepared and three permanent sample plots laid out on timber sale areas on the Minnesota National Forest. Crowns were mapped and marked for cutting to leave 50 per cent, 30 per cent and 0 per cent crown cover after cutting. The reproduction plots were laid out to record the establishment of white pine reproduction from adjacent seed trees. In addition, more than 30 temporary plots were studied to show progress of natural conversion of aspen-birch to conifers, including some on the Superior by Brown and Barker at the end of the month.

Kittredge spent from June 8 to 24 in Ontario to complete his measurements on forest plantations. He visited eighteen older plantations in Ontario, the Provincial Forestry Branch at Toronto, the Forest Station at St. Williams, the Dominion Forestry Branch at Ottawa, and the Petawawa Forest Experiment Station. Hisconclusions on planting checked well with those in the Lake States. He found splendid nursery and experimental plantations and demonstration areas at St. Williams.

The Petawawa Forest Experiment Station was established in 1918 and already has almost 100 permanent sample plots on a variety of projects, carefully laid out, marked, and recorded. Kittredge reports that intensive sample plot work was not, however, on environmental factors but on cuttings, growth, and reproduction; the latter by means of seed sowed in seed spots under different degrees of cover, with and without litter and rodent screens. An attempt is also being made to control the seed factor in studying natural reproduction.

In general, he found that the research at the Forest Experiment Station in Canada shows systematic plans, but less influenced by the urgent demands for results than ours. They have made in Canada a thorough study of volume and form and completed comparable volume tables for the major species. Yield and growth is the next big project on their program. A large proportion of their efforts is devoted to intensive permanent sample plot work, although it may not give results for several years. They are much interested in using statistical methods to check their mensuration work.

Zon spent most of June also in the field in Michigan, Wisconsin and Minnesota, first with Sherman and Shepard and later with Shepard alone. They attended a conservation meeting at Gladstone, the annual meeting of the Upper Peninsula Development Bureau at Menominee, looked into the possibilities of acquisition at Cadillac where sentiment is strong for a National Forest and where free donations of land are possible, visited the "selective" logging on Holt's tract at Townsend, Wis., and went over the work on the Cloquet Forest. Zon also attended the annual meeting of the Agricultural Engineers at Madison, where he substituted Greeley and delivered a talk on the engineering aspects of forestry, which is to be published in the official organ of the Agricultural Engineers.

The staff of the Station was increased this month by the addition of A. Koroleff as a temporary assistant. He arrived on June 6 and has been assigned to the study of the comparative profitableness of logging small trees versus large trees. After the preparation of a tentative working plan, he left for the field and is now already working on the operations of the Thunder Lake Lumber Company at Rhinelander, Wis.

Among the visitors to the Station were P. M. Barr, Carlos Sulit, Dr. Schmitz of Idaho, and Gifford Pinchot, to whom the University gave a reception at University Farm.

Cloquet Station

June 1925

The past month has seen the completion of the nursery and planting season at the Cloquet Experiment Station. Altogether about 150,000 transplants were shipped out this year, most of them going to private parties throughout the State. There seems to be a considerable growing interest on the part of private individuals to try forest planting. Out of the 150,000 only 9,000 were supplied to the State Forest Service. Three hundred thousand 2-year-old conifers were transplanted and 150 seedbeds were sown.

The policy of planting fail places and areas not satisfactorily stocked was started this spring. Fifteen acres of cut-over and burned-over land on the Station were planted to Norway pine. There is probably a total of 100 acres of this character requiring planting on the Station and it is planned to plant a portion of it every year.

The study of water level in the swamps was started. This was carried on by means of sinking two glazed tiles vertically in the swamp and at certain periods measuring the distance from the top of the tile to the water surface. It is hoped in this method to get some indication of the relative water table in different parts of the swamp.

In connection with the experimental thinning installed last year in a 27-year-old jack pine stand, one of the most frequent questions asked was what was the cost of this thinning. It is of course impossible to give any real idea of the cost because of the amount of care taken in measuring trees left and trees cut out. A half acre was laid out in a similar stand and thinned somewhat later. It was found that it took two men 2-1/2 days to thin the one-half acre. About three cords of firewood were removed. The labor used on this was forest school students. No particular pains were taken in marking the trees in advance of the cutting. Students were simply taken out and a portion of the plot thinned until they got a general idea of the amount of material to remove. If it were possible to use real competent ax men the length of time required would probably be reduced. However, this might necessitate going through and marking the trees to be left.

During the past month there have been quite a few visitors to the Station. One party consisting of H. H. Chapman, Ray Tuttle, Crosby Hoar and Raphael Zon spent two days at the Station inspecting cuttings, thinnings and plantings. Mr. Shirley Allen, forester for the American Forestry Association, spent one afternoon at the Station. Other visitors included T. M. Knappen, National Lumber Manufacturers' Association, P. M. Barr, director of the forest experiment station in British Columbia, C. S. Ringold, organizer of the Izaak Walton League of St. Paul.

APPALACHIAN FOREST EXPERIMENT STATION

General

There were no extensive field trips during June, the staff devoting itself largely to office work on current projects, deferred plans, and the improvements on the Bent Creek investigative area in the Pisgah National Forest. Several short field trips on investigative work were made, however, and Frothingham spent the last two days of the month in Washington, where he attended hearings of the Federal Horticultural Board on the subject of quarantine against the white pine blister rust. A. H. McAndrews, who spent last summer on insect investigations for the Bureau of Entomology, mostly at Bent Creek, reported again for duty and is assisting R. A. St. George at the Bent Creek entomological camp.

Dr. F. C. Craighead, entomologist in charge of forest insect investigations, spent a few days in Asheville and at Bent Creek, enroute for the Kaibab National Forest. With him was Dr. E. J. Krauss, of the University of Wisconsin. Dr. Krauss intends to return to Asheville later in the summer for insect investigations, particularly with reference to the physiological activities of trees.

Mr. P. M. Barr, of Vancouver, B. C., who has just finished post graduate work in forestry at Yale and is to be in charge of a forest experiment station in British Columbia, spent a few days in Asheville and was shown the Bent Creek sample plots by McCarthy and the Biltmore plantations by Haasis. Messrs W. F. Bancker and H. S. Fisher, of New York, and C. B. Thompson, of Atlanta, representing the Western Electric and Bell Telephone interests, conferred with Frothingham with regard to the spread of the chestnut blight and its relation to the telephone pole supply. Other visitors were District Forester E. W. Kelley, District Engineer J. C. Dort, State Forester J. S. Holmes, Dr. Carl Hartley, of the Bureau of Plant Industry, R. C. Hall, of the Timber Section, Bureau of Internal Revenue, J.H. Davis, Jr., of the University of Chicago, and E. A. Eames, of Buffalo, N. Y. Mr. Davis is engaged in graduate work in plant ecology, and Mr. Eames is completing the photographing of the native orchids.

Bent Creek Field Station

Frothingham accompanied District Forester Kelley and Supervisor Rhoades over the proposed investigative area at Bent Creek, Pisgah National Forest, and a statement was prepared designating the boundaries of the area in general terms. This was later signed by the District Forester and the Supervisor. No survey will be made for the present. The area embraces between 150 and 200 acres, including the north and south facing slopes of the lower Bent Creek valley and eight or ten acres of bottomland suitable for an experimental nursery, plantations, and arboretum.

A water supply has been brought to the building site by 800 feet of pipe from a good spring, made permanent by a length of 18 inch tile. In addition, a short stretch of road leading from the hard surfaced road from Asheville was put in fair shape for trucks, and the ground was cleared for the buildings. In conference with Dr. Craighead it was decided to erect first a 14 by 16 foot insectary. Materials for this were purchased on bid, and the construction started. The building of the insectary and field laboratory will be under McCarthy's direction until he leaves for field work about July 15. After conference with the staff and Dr. Craighead, plans and specifications for the laboratory were drawn up.

District Engineer Dort went over the grounds with McCarthy and made valuable suggestions as to roads, water supply, and details of building construction.

Damping-off and weed control experiments (Fp - 3)

Haasis, Averell, and Budd spent two days at Canton, N. C., making counts in the seed-beds which were chemically treated by Korstian and Haasis last fall and this spring in order to determine the most effective means of controlling damping-off. The figures obtained were analyzed by Dr. Carl Hartley, of the Bureau of Plant Industry, during a visit at Asheville. Treatment with copper soap powder was not very effective in controlling the damping-off. Of three treatments tried, rolling the seed in the soap powder was the most effective. Formaldehyde applied ten days before sowing did not give satisfactory results, especially the higher concentration (1/2 fluid oz. to the square foot). When applied in the fall before spring sowing the results were moderately satisfactory. The most successful treatment was an accidental combination of formaldehyde applied 24 days before sowing and sulfuric acid applied at the time of sowing.

Natural reproduction of hardwoods following cutting (Mc - 2)

Counts were made of the yellow poplar seedlings in the quadrats of the two plots established at Bent Creek this spring. On the area which was burned and clearcut this spring yellow poplar seedlings of this year's germination were found at the rate of 36,000 to the acre; on the burned, uncut area, at the rate of 32,000 to the acre; on the unburned area, cut this spring, at the rate of 2,400; and on the unburned, uncut area, at the rate of 1,300. In one quadrat in a bed of sphagnum on the uncut, unburned area they were growing at the rate of 24,000 to the acre. None were found in the ash piles where the logging slash had been burned this spring. On the unburned, uncut area there were older yellow poplar seedlings at the rate of 500 to the acre. These varied in size from less than a foot high to 3 inches in diameter at breast height. There were none of them in the sphagnum quadrat.

The poplar seeds which fell on the burned area in the fall and winter of 1924 were largely killed by the fire of April, 1925, and it is worth noting that the poplar reproduction which has appeared on the burned area, at least, since the establishment of the plots, must be largely or wholly from seed which has been stored a year or more in the duff.

Oak regeneration study (Mr - 2)

The mid-summer examination of the experimental oak beds in the Champion Fibre Company's nursery at Canton, N. C., was made by Field Assistants Averell and Budd under Korstian's direction, and the results were partially worked up by Averell.

ROCKY MOUNTAIN EXPERIMENT STATION.

June Activities

The month at the Fremont Laboratory was very largely taken up by the routine work in going projects, there being no developments of importance.

Bates left Colorado Springs on June 9 to attend the meetings of the Pacific Division, A. A. A. S. at Portland, stopping enroute at three points in District 1 and on the return trip in Districts 5 and 4. Owing to an opportunity to meet Dr. Craighead and Pearson of the Southwestern, on the Kaibab, to go over the insect situation, return to Colorado Springs was made a week later than planned, or on July 12. The entire trip was extremely illuminating and instructive. The most striking impression obtained from the trip was the need for greater coordination between the various Districts and Experiment Stations. In spite of all the available means for intercourse between the Districts, there is a surprising lack of knowledge in all Districts as to what is being done elsewhere, with special reference to research activities.

At Portland Bates read papers before the forestry symposium on "Some relations of botanical ecology to silvicultural practice" and before the Botanical Society on "The Relative Light Requirements of Some Coniferous Seedlings". The preparation of the data for the second paper has brought out some differences of importance between the species tested, and has shown that what we usually describe as "shade tolerance" is only indirectly a matter of light, and more directly a function of the ability of the plant or species to subsist with a limited amount of moisture, when its root system is starved by lack of photosynthetic activity. Thus the minimum light requirements of all species are far below the light conditions of most forest habitats, where trees starve because of more or less unfavorable soil conditions.

The way now seems clear for a repetition of the last light test, in which artificial light was used, under a plan which will eliminate in large measure the doubt as to whether the trees actually grew in the minimum light intensities which they tolerated. With a larger table available through recent construction, it is hoped to treat a larger number of species, including the Pacific Coast trees which show the greatest degree of tolerance, and which are doubtless much lower in the scale than our Engelmann spruce. It is also hoped to be able to test comparatively some such very intolerant species as the southern pines. Effort will be made to get this test under way during July, since Bates expects to be absent most of August. The success of this plan will depend somewhat on the availability of seed of the species desired.

DISTRICT 5

Show's time during the first few days of June was occupied with a variety of conferences occasioned by Col. Greeley's visit. Following that a trip of eight days was made with N. G. Jacobson, researcher of the Western Forestry and Conservation Association, in which a determined effort was made to instruct him in the importance of advance reproduction in the pine region. A wide variety of old and new cutting areas, and the different methods of logging were seen.

Dunning spent two weeks on the Sierra studying distribution of increment on trees left after logging and height growth on the same trees.

A short trip was made to the California to reexamine detail plots on a summer burn. Much newly germinated yellow pine and Douglas fir complicated the job.

Show took Bates on a flying trip to the Stanislaus where various permanent sample plots were visited.

SOUTHERN FOREST EXPERIMENT STATION

General

June at Station headquarters has been a quiet month of compilation and report writing by the four members of the staff on office detail. After completing his leave Shivery spent a day at the Washington Office, and later visited the Georgia School of Forestry before returning to New Orleans. Hine came in June 1 from a month's field work at Urania. Forbes' Washington detail and annual leave continued through June. On the third he gave an illustrated address before the "Family Meeting" in auditorium of National Museum, Washington, on the work of the Southern Forest Experiment Station.

Mr. Walter J. Damtoft, Forester for the Champion Fibre Company, Canton, N. C., visited our Bogalusa projects in company with Hadley and afterwards spent a day in the New Orleans office. Messrs. Rothery and Brinckerhoff of the firm Vitale & Rothery, Consulting Foresters, New York City called separately to obtain information on the general conditions of Southern pine cut-over lands and the rate of growth for virgin and second-growth pines. These gentlemen represented Northern pulp and paper interests.

Measurements

In connection with the computation of volume of some of his yield plots Hine experimented with the alinement chart as a means of expressing the volume table of loblolly pine prepared from the Southern pine growth study data.

Management

Demmon, with some assistance from other members of the staff, checked over the extensive survey data obtained last winter and arranged and coded it for analysis by the card tabulating system.

Shivery began work on the report of establishment of the methods-of-cutting study at Bogalusa. He also began the preparation of a key for the identification of Southern Coastal Plain soils, which when completed will be of great value to others not so well informed on soils.

Naval Stores

With the turpentine season in full swing at the Starke Branch Station Wyman and Wakeley were very busy with the supervision of the current chipping, dipping, and weighing on the various naval stores projects. Some interesting results of this season's work to date are as follows:

In slash pine narrow, shallow, streaks are resulting in highest yields of gum. Wide faces are holding up astonishingly well. Gum yields are better from trees in open-grown stands.

In longleaf narrow streaks are proving unsatisfactory. The shallow chipping is yielding well but is surpassed by chipping 3/4" deep. As with slash, yields from trees of open stands are higher.

Daily weighings indicate that the weather of the first day after chipping is very important, as 40% to 70% of the total weekly yield flows in the first 24 hours after chipping.

PACIFIC NORTHWEST FOREST EXPERIMENT STATION

With the end of June the field work of all projects is well under way, the last temporary man has arrived and, it is hoped, all changes in personnel completed for the summer. Mr. Munger left Portland June 9 for an extended visit to the East, where he will attend his class reunion at Yale University, spend several days at Washington, and visit various of the eastern forest experiment stations.

Most of Isaac's month was also spent on the Douglas fir natural reproduction study which he and Kienholz are jointly conducting. Phases of this study are supplementary to that of Hofmann's as reported in Bulleton No. 1200, but in most respects the investigations now under way are quite distinct from previous work in this field. Among other things, delayed germination is being considered, especially with reference to the survival of this late-germinating seed. Kienholz, a specialist in plant ecology, is devoting practically all of his time to the chemical aspects of the study. Isaac re-examined during the month several of the permanent sample plots which have been established on strategic areas and are remeasured at intervals of two weeks in attempting to learn something of the survival of seedlings.

Some part of Isaac's time was also spent on the snag survey. For many years it has been a moot question, and one which is now rapidly coming to a head, as to the relative cost and desirability of felling or leaving snags in Douglas fir logging operations. Accurate data on the subject is lacking and Isaac is attempting to make actual counts of the number of snags, noting their size and condition, comparing the cost of felling the snags with the saving in damage to logging equipment, injury to men, and ease of fire control. Cloudy weather during most of the month has permitted the burning of slash much later in the season than would normally be expected.

Several days were devoted by Simson to the Douglas fir natural reproduction study, but most of the month was occupied with study of relative humidity with relation to the ground cover and topography. With the arrival this month of the recording milli-ammeter, actual work on the static study can be started.

The work in Washington on the Douglas fir yield study was completed during the last days of June and the crews are now in Oregon where the field work of the study will be completed this fall. Including the work done in 1909, 1911, 1924 and 1925, a total of 1026 sample plots were measured in Washington. Approximately 450 plots are yet needed in Oregon to complete the quota of 1,000 plots for that state. During June, the two yield study crews measured 172 sample plots comprising 95 acres and measured, in addition, 140 chains of empirical strip cruise.

During the month a number of changes occurred in the personnel of the staff. Dr. Raymond Kienholz arrived from the University of Illinois to assist in the Douglas fir natural reproduction study, Korenkiewicz was transferred from the yield study to the Crater Forest and his place taken by I. H. Sims of the University of Michigan. Weaver, temporarily at the Wind River Branch, went to the Umatilla Forest, and C. W. Kline, accepted a permanent appointment as Junior Forester with the District Office, being replaced by F. M. Knapp, an instructor at the University of British Columbia. Howell, assisting at Wind River, accepted an appointment to District 4, and Joseph Strehle, assigned temporarily as field assistant at the Wind River Branch, arrived early in the month to take Howell's place.

Colonel Greeley, Forester, and C. G. Bates of the Rocky Mountain Experiment Station, were visitors at the office during the month.

From June 17 to 21 the Pacific Coast section of the American Association for the Advancement of Science held its annual convention in Portland, and one afternoon of this meeting was devoted to a forestry symposium. Papers were read by Dean Hugo Winkenwerder of the University of Washington Forest School, Dr. E. P. Meinecke, C. G. Bates, and Ralph Hopping read a paper prepared by J. M. Swaine, Canadian Entomologist. During the meetings all members of the permanent staff of the Station were in Portland and at one session of the American Meteorological Society, Simson gave a short paper on the use of static in predicting relative humidity.

On Saturday, June 20, forty-eight delegates to the convention went on a field trip to Wind River, arranged jointly by the Experiment Station, the District Nursery, and the Columbia National Forest. Here the visitors were shown the methods employed in growing and transplanting seedlings, the various experiments being conducted in that vicinity by the Experiment Station, and were given a demonstration of the use of a small portable pump in fighting fires.

MANUSCRIPT NEWS NOTES

District 5

Modifications in the forests of the Pacific slope due to human agencies. S. B. Show (Amer. Assn. Meeting, Portland)

Pilgrim Creek Yield Plot. (Progress Rept). S. B. Show. (Journal Forestry)

Douglas Fir Thinning. (Progress Rept). S.B. Show. (Jour. For.)

Timber Growing and Logging Practice in the Pine Region of California. S. B. Show. (Dept. Bul.)

District 6

Germination and Survival of Natural Reproduction on Cut-over Areas in Western Washington. E. J.Hanzlik. (Jour. For.)

Northeastern

Timber Growing and Logging Practice in the Northeast. S. T. Dana.

Pacific Northwest

Rainfall Probability. T. T. Munger. (Mon. Wea. Rev.)

Static as an Indicator of Fire Weather. A. G. Simson. (Mon. Wea. Rev.)

Lake States

Engineering Aspects of Forestry. R. Zon. (Agric. Engineering)

Southern

Kerosene Emulsion for Control of Toumeyella. E. W. Hadley (Economic Entomology)

Forest Fires in the Southern Coastal Plain. R. D. Forbes. (To Board of Review)

Northern Rocky Mountain

Factors Affecting Reproduction of Engelmann Spruce. W. C. Lowdermilk. (Page proof J.A.R.)

Cyclic Fluctuations of Rainfall in the Northern Rocky Mountains. H. T. Gisborne. (Read before the A.A.A.S. at Portland, June 17, 1925). (Mo. Wea. Rev.)

Relation of Leaf Structure of Conifers to Light and Moisture. J. A. Larsen. (Jour. of Botany).

Washington

Some Possible Errors in the Use of Curves. Donald Bruce. (Jour. Agri. Res.)

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Sparhawk, W. N. Why the United States is Interested in Latin-American Forest Development. (Bul. of the Pan-American Union, June, 1925.)

Wackerman, A. E. Jack Pine - The Conderella of the Lake States. (American Lumberman, June 13, 1925).

Stickle, Paul W. & James W. Toumey. A New Device for Taking Maximum and Minimum Soil Temperatures in Forest Investigations. (Ecology, April, 1925).

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